

## **Supplementary data set**

### **Antioxidant potential-rich Betel leaves (*Piper betle* L.) exert depigmenting action by triggering autophagy and downregulating MITF/Tyrosinase in vitro and in vivo**

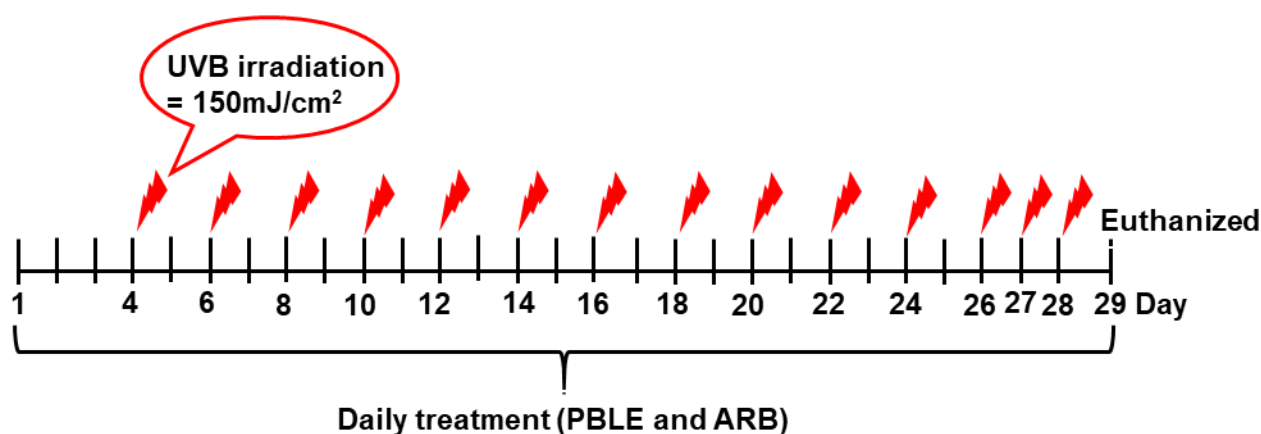
Md Badrul Alam<sup>1,2</sup>, Na Hyun Park<sup>1</sup>, Bo-Rim Song<sup>1</sup> and Sang-Han Lee<sup>1,2,\*</sup>

<sup>1</sup>Department of Food Science and Biotechnology, Graduate School, Kyungpook National University, Daegu 41566, Republic of Korea

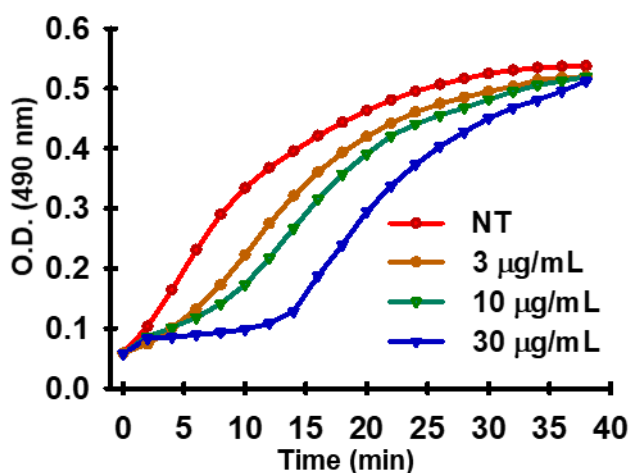
<sup>2</sup>Food and Bio-Industry Research Institute, Inner Beauty/Antiaging Center, Kyungpook National University, Daegu 41566, Republic of Korea

\*Corresponding author:

Dr. Sang-Han Lee; Department of Food Science and Biotechnology, Kyungpook National University, Daegu 41566, Korea, Phone: (82)053-950-7754 (Office); Fax: 053-950-6772; Email: sang@knu.ac.kr



**Figure S1.** Experimental schedule for conducting the depigmenting effect of PBLE on UVB-induced pigmentation of HRM-2 mice. HRM-2 melanin-possessing hairless mice were treated with the vehicle or PBLE on a designated site on the dorsal skin, according to the indicated schedules. ARB: arbutin.



**Figure S2.** Effects of PBLE on the monophenolase activity of tyrosinase. Enzyme activity was tested in the presence of L-tyrosine, as a substrate. Results are presented as the means  $\pm$  SDs of three experiments.

**Table S1. List of antibodies used in this study.**

<b>Antibody</b>	<b>Dilution</b>	<b>Supplier</b>	<b>Catalog No.</b>	<b>Host</b>	<b>MW, kDa</b>
Anti-TYR	1:1000	Abcam, Cambridge, UK	ab170905	Rabbit	60
Anti-TRP-1	1:1000	Abcam, Cambridge, UK	ab235447	Rabbit	61
Anti-TRP-2	1:1000	Abcam, Cambridge, UK	ab221144	Rabbit	59
Anti-MITF	1:1000	Abcam, Cambridge, UK	ab140606	Rabbit	58
Anti-p-p38	1:500	Bioworld Technology, Inc.	BS4635	Rabbit	42
Anti-p38	1:500	Bioworld Technology, Inc.	BS3567	Rabbit	42
Anti-p-ERK1/2	1:500	Bioworld Technology, Inc	BS5016	Rabbit	42,44
Anti-ERK1/2	1:500	Bioworld Technology, Inc.	BS 6472	Rabbit	42,44
Anti-JNK	1:500	Bioworld Technology, Inc.	BS3630	Rabbit	46,54
Anti-p-JNK	1:500	Bioworld Technology, Inc.	BS4322	Rabbit	46,54
Anti-CREB	1: 1000	Abcam, Cambridge, UK	ab31387	Rabbit	43
Anti-p-CREB	1:1000	Abcam, Cambridge, UK	ab194687	Rabbit	43
Anti-LC3	1: 2000	Abcam, Cambridge, UK	ab192890	Rabbit	15
Anti-ATG5	1:10000	Abcam, Cambridge, UK	ab108327	Rabbit	55
Anti-Becclin1	1: 5000	Abcam, Cambridge, UK	ab207612	Rabbit	52
Anti-p62	1:10000	Abcam, Cambridge, UK	ab109012	Rabbit	55
Anti- $\beta$ -actin	1:1000	Abcam, Cambridge, UK	ab8227	Rabbit	45